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MOOCs: A Differentiation by Pedagogy, Content and Assessment

Abstract

Purpose – Massive Open Online Courses (MOOCs) have often been divided between connectivist MOOCs (cMOOCs) and extended MOOCs (xMOOCs). Each form of MOOC proposes a distinctive view about knowledge acquisition. However, the breakdown between the two MOOCs is in practice too broad, and a more fine grained approach is needed. Thus, this paper aims to describe the organisational features of exemplar MOOCs and their differences.

Design/methodology/approach – The study observed ten newly available MOOCs aimed at teachers of English as a second language and included examples from existing providers; NovoEd, Coursera, FutureLearn and Canvas. These MOOCs were analysed and compared using a matrix with three main focuses: pedagogical assumptions, content materials, and assessment.

Findings – The findings revealed that all courses corresponded to the idea of an xMOOC in that they were run on a model of instructional design. However the course materials varied in respect to media used, use of networking, discussion forums and degree of openness. In terms of assessment, all MOOCs used formative approaches, all had automated responses but only some had summative and peer assessment.

Originality/value – The study succeeded in showing the variation in courses, thus enabling the range of possibilities open to course designers and providers.

Keywords MOOC, cMOOC, xMOOC, online learning

Paper type Research paper

Introduction

Massive Open Online Courses (MOOCs) are a relatively new form of online education designed to support open learning on a large scale and across diverse geographical distances. The term MOOC was first introduced in 2008 by Dave Cormier to describe an open online course “Connectivism and Connective Knowledge” (also known as CCK08) led by George Siemens and Stephen Downes. The course, offered by the University of Manitoba, was initially designed for a group of 25 enrolled, fee paying students to study for credit. However, the course ended up attracting 2,300 registered learners when it was opened up worldwide (Rodriguez, 2012). In 2011, Sebastian Thrun and Peter Norvig, at Stanford, opened up access to the course they were teaching, ‘Introduction to Artificial Intelligence’. This attracted 160,000 learners in more than 190 countries (Beckett, 2012; Hill, 2014; Martin, 2012). The CCK08 and Introduction to Artificial Intelligence initiatives were followed by the formation of three companies (Coursera, edX and Udacity) which set out to partner with selected universities in USA to develop open courses. The New York Times went so far as to declare 2012 as “The Year of the MOOC,” (Pappano, 2012). Since then, a growing number of educational institutions have been experimenting with MOOCs, and an increasing number of people across the globe are enrolling on them, albeit it is an open question as to how many people actually complete the courses on which they have enrolled and how important it is that they do so. More than 6.5 million people registered for a MOOC in 2013 (Gallagher and Garrett, 2013) and enrolments accelerated in 2014 (17 million) and 2015 (35 million) (Shah, 2015). In 2016, 58 million learners signed up for

at least one MOOC and 23 million of them were those who registered for the first time (Shah, 2016). In March 2017, Class Central recorded the cumulative number of MOOCs as reaching nearly 8,500.

With increasing uptake and interest, MOOCs have become a popular topic in many blog posts and an object of scholarly research. Based on systematic reviews of the MOOC literature (e.g. Liyanagunawardena *et al.*, 2013; Ebben and Murphy, 2014; Hew and Cheung, 2014; Jacoby, 2014; Kennedy, 2014; Veletsianos and Shepherdson, 2016), a number of themes have emerged. One of the most salient of these is the value of the distinction between connectivist MOOCs (cMOOCs) and extended MOOCs (xMOOCs). Generally, cMOOCs are based on open-learning principles in which learners interact within an open network and share their contributions, allowing collaborative knowledge building. On the other hand, so-called xMOOCs adopt a more traditional pedagogy and rely on a tutor-centered approach. This breakdown into two categories seems straightforward, yet broad. This paper, therefore, explores whether the organisational features of MOOCs can be broken down using a more fine grained approach.

MOOCs: The Key Features

MOOCs are widely known to exhibit two core features; open access to anyone, anywhere with internet access (Levy, 2011; Martin, 2012; Pappano, 2012; Bates, 2014; Chen, 2015; Terras and Ramsay, 2015; Conole, 2015; Robinson *et al.*, 2015; Sun *et al.*, 2016) and scalability, in which courses are designed to support an indefinite number of participants (Agrawal *et al.*, 2015; Chen, 2015; Conole, 2015; Robinson *et al.* 2015; Stokes *et al.*, 2015; Sun *et al.*, 2016). MOOCs are also known for being ‘massive’, ‘open’, ‘online’ and ‘courses’. They are ‘massive’ in number of learners (Tschofen and Mackness, 2012; Grainger, 2013; Harrison, 2014; Sun *et al.* 2016) and extent of activity (Blagojević and Milošević, 2015; Sun *et al.*, 2016). Even so, some MOOCs, of course, may attract only small numbers of participants. ‘Open’ refers to absence of restriction on registration and most MOOCs are free for the learner who wishes to participate (Tschofen and Mackness, 2012; Anderson, 2013). However, some are not and learners have to pay in order to gain access to the course. This reduces the idea of openness. ‘Online’ refers to use of the Internet in the course delivery. Finally, ‘course’ speaks of clearly defined learning objectives and outcomes (Blagojević and Milošević, 2015; Sun *et al.* 2016) with, usually, start and end dates (Padilla Rodriguez *et al.*, 2015).

MOOCs come in various formats. Some are delivered according to pre-defined schedule fixed by the course instructor, but many MOOCs are self-paced, giving learners the opportunity to participate flexibly in terms of time and space. Very often MOOCs involve listening to online lectures, reading articles, and completing tasks or self-assessments. In addition to the course materials, MOOCs usually provide interactive user forums that support community interactions between learners and educators (Agrawal *et al.*, 2015). With all the said features, it is believed that MOOCs could offer a viable alternative to traditional face-to-face education in terms of instruction, student learning and access.

CMOOCs or XMOOCs?

The two most frequently used terms to define MOOCs are cMOOCs and xMOOCs. CMOOCs are connected to “principles of connectivism, openness and participatory teaching” (Jacoby, 2014, p. 76) and emphasise “human agency, user participation, and creativity through a

dynamic network of connections afforded by online technology” (Ebben and Murphy, 2014, p. 333). CMOOCs are seen as having initiated the concept of massive education and are developed as a platform for learners to interact and form knowledge through their collaborative contributions. Therefore, learners with a preference for cMOOCs are often those who “self-organise their participation according to learning goals, prior knowledge and skills, and common interests” (McAuley *et al.*, 2010, p. 4). XMOOCs, on the other hand, follow an instructional model, which is more cognitivist-behaviourist in approach (Hew and Cheung, 2014) and rely on the transmission of content (Bates, 2012; Stacey, 2013). XMOOCs are an extension of widely followed pedagogical models and are commonly dominated by video presentations, reading texts and automated assessment (Bayne and Ross, 2014). Learners with a preference for xMOOCs are often those who comfortable with and value the traditional pedagogical mode of education.

Based on a number of reviews (e.g. Liyanagunawardena *et al.*, 2013; Hew and Cheung, 2014; Jacoby, 2014; Kennedy, 2014), one distinction between cMOOCs and xMOOCs which is often discussed is the degree of openness. CMOOCs are created without a centralised core content because learners are expected to generate the content for their own learning (Baggaley, 2013), through collaborative networking. Thus, cMOOCs are largely open in terms of the range of opportunities (Siemens, 2013). In short, cMOOCs focus on principles of autonomy, diversity, openness and interactivity (Rodriguez, 2012; Jacoby, 2014; Kennedy, 2014). In contrast, openness is less present or defined differently in xMOOCs. They are centralised networks on one designated main platform (Jacoby, 2014; Kennedy, 2014), and the course content is usually defined by designers (Baggaley, 2013). Most of the time, interactions take place only in discussion forums (Sokolik, 2014).

Despite the differences, there are some common elements between cMOOCs and xMOOCs. For instance, both cMOOCs and xMOOCs have course outlines describing the general structure of the course. However, as stated earlier, xMOOC instructors provide the content, whereas in cMOOCs, the structure is filled by the learners (Hew and Cheung, 2014).

Methodology

This paper was developed as part of a research project investigating the benefits of MOOCs for the continuing professional development of teachers. In finding out what teachers got out of their participation in MOOCs, the study explored how MOOCs were organised in terms of their pedagogy, content materials and assessment. There were three phases of data collection in respect to this part of study: 1) searching for appropriate courses, 2) selecting courses in which to participate, and 3) observing courses through participation.

In the first phase, relevant courses were identified using the terms ‘Teacher Training’, ‘Teacher Education’, ‘Teacher Professional Development’ and ‘Professional Learning in Education’. The search was carried out using the portals at <http://www.mooc.ca/providers.htm> and <https://www.class-central.com/>. The search was limited to the period from May to August 2016, corresponding to the timescale of the project. There were 118 teacher-education-related courses found, covering topics on teaching techniques and strategies, instructional design, technology tools, and teaching of languages. Reflecting the researchers’ interest in language teaching, 28 courses aimed at teachers of English as Second Language were shortlisted.

The second phase involved a further reducing of the sample based on two criteria: course start date and open access. Of the 28 courses, there were only ten open for registration, the others were ongoing or no longer available. Therefore, in the final phase, ten courses were

observed. Each course aimed to provide subject knowledge, methods and strategies relevant to teaching English as a second language. The observation was carried out by one of the authors, who enrolled and participated within the courses for the entire duration, attempting the activities set by the course designers. The observation period lasted 16 weeks, with four to five hours a week given to participation on each course. All the courses were open, self-paced and offered for free or with nominal fees. Seven of the courses were provided by Coursera (operated by two universities) while the other three courses involved different platforms - Canvas, FutureLearn and NovoEd - and each was based at a different university (see Table I). The length of all courses were different, from as short as four weeks to as long as 20 weeks as seemed to be set by each of the operating universities.

Table I. Information about the ten courses

An observation journal was used to log reflections on the experience of taking part and noting the structure and design of the courses. The journal entries were later analysed and, as regards the architecture of the courses, the key themes were identified as pedagogy, content and assessment. Matrix tables allowed a comparison to be made across the courses in regard to each theme.

Findings

The findings are presented in respect to pedagogy, content and assessment.

Pedagogy

Based on the observation, all courses were found to work to a fairly similar approach. Each course was introduced and expectations were explained. Courses were designed with clearly defined learning outcomes and content was delivered by a team of educators. The pattern was of providing content, assessing understanding and in some cases applying understanding to real life context.

All courses were led by educators with different roles: Instructors, Teaching assistants, Teaching staff or Mentors (see Table II). Instructors were responsible for the overall running of the course from designing the course in the first place to assessing learners' participation. Teaching assistants and teaching staff helped instructors by monitoring participation and facilitating learners with any technical problems that occurred. Mentors, on the other hand, were mostly volunteers among learner participants who may have had experience participating in MOOCs. They helped the teaching team by taking part in forum discussions, providing extra contributions, sharing experiences and sometimes answering questions posted by learners. Their role as mentor was made public so that learners could ask questions to them directly.

Of all courses, only one (Courses 9) focused primarily on content, for example 'Grammar' and 'Conversational English', while the others emphasised pedagogy - teaching techniques and strategies in English language classrooms. Knowledge transfer appeared a common concern in courses which emphasised pedagogy. For example, in order to complete some assessments, learners had to try out techniques and strategies in real life contexts. In terms of social contact, learners in Courses 2 and 10 were given freedom to discuss, share and ask for information in the discussion threads.

Table II. The pedagogical assumptions in the ten courses

Content

In terms of materials, all courses provided learners with reading materials (see Table III). Some courses used videos and lesson plan templates as additional materials, depending on course objectives and learning outcomes. For content delivery, nine courses used videos as the main medium. However, Course 2 did not have any lecture video and most of the time, learners had to work from texts. This was also the only course which provided badges to learners. There were seven badges altogether, and every time learners completed or attempted tasks, they would be awarded a badge. Courses 2 and 10 provided opportunities for learners to discuss and share knowledge with others through discussion threads. Additionally, Course 10 also integrated the use of Facebook to encourage active participation among learners and extend communication outside the formal learning space.

Table III. The structure and organisation of materials in the ten courses

Assessment

Even though the structure of each course differed, they were very similar in one respect; they all provided assessments for learners to test their understanding of what they had learnt (see Table IV). All courses provided learners with formative assessments which learners had to attempt every week. Only six courses (Courses 3 to 8), which were operated by the Arizona State University, included summative assessments. Course 10, however, differed from other courses as the timing of assessment did not seem to follow a clear pattern. On many courses, learners could attempt the assessments up to three times, but Course 10 differed again as it gave learners as many opportunities as they wanted. Course 1, on the other hand, provided only written teaching assignments, so no further attempts were available. Course 1 did not provide auto-generated answers because the assessments only required peer grading. Peer grading was available in other courses too, except Courses 2, 3 and 10. Although six courses (Courses 3 to 8) had summative final quizzes, only three of them (Courses 6 to 8) required learners to verify themselves before they attempted these quizzes. This self-verification was carried out through key stroke analysis and image identification.

Table IV. Aspects of assessments in the ten courses

Discussion

There are three key points for discussion arising out of this exploration of MOOCs for teachers of English as a second language: the value of the distinction between cMOOCs and xMOOCs; the wide variation within xMOOCs; and implications arising from this variation.

As regards the first point, it was seen earlier that MOOCs have been classified using the core distinction of cMOOCs and xMOOCs. However, in practice, at least in the domain of teacher education, the distinction between the two is not very helpful because the courses explored in this paper turned out to be xMOOCs ran on a model of instructional design within a single platform (see Table II). These courses relied on the transmission of structured, centralised content mainly generated by designers. This appears to be the pattern adopted within the broad template offered within platforms such as Coursera, Udacity, EdX and FutureLearn. It is not

surprising then, that xMOOCs overshadow cMOOCs (Marcinkowski and Fonseca, 2015; Van Dijk and Poell, 2015). What may have started out as a new, even disruptive approach to teaching and learning (cMOOC) appears to have been gathered within a more traditional approach based on instructional learning (xMOOC). This arguably reflects a recurring pattern in history of ICT, an assimilation of technology rather than the adaption to the technology. Assimilation may not, of course, be a negative thing. CMOOCs are not necessarily superior to xMOOCs, but their domination may suggest that opportunities have been lost for alternative approaches. One explanation for this dominance may be that xMOOCs represent the approach that both designers and learners are more comfortable with and as put by Marcinkowski and Fonseca (2015, p. 7), they are ‘reproduced from established material forms through a kind of habituation practice’.

The second key point arising from the observation of courses is that not all xMOOCs are the same. They differ in terms of pedagogy, content and assessment. In terms of pedagogy, some of the courses offered social interactional opportunities and learners had the opportunities to connect within other networks such as Facebook, showing that interactions do not always take place in discussion forums (see Table III). Some courses gave extended opportunities for learners to use the knowledge they gained from the course to their real life work. XMOOCs are often described as closed and contained within only a single platform (Jacoby, 2014; Kennedy, 2014) but this is not necessarily the case. In terms of content, some courses offered a mix of media and spaces where learners could create, share and transmit knowledge and, in terms of assessment, some courses allowed learners to play the role of educators during peer grading assessment (see Table IV). If openness covers transparency, course delivery, access to courses, course content, the manner of instruction, and the way assessment is conducted (Jacoby, 2014), then some of these courses could be described as more open than others. xMOOCs should not be caricatured as purely closed.

Arising from the discussion above, the third and final point is that when it comes to xMOOCs one size does not fit all and Table V shows the key questions that can be asked when trying to describe or design an xMOOC. These questions revolve around the degree of openness offered; courses can be *more* or *less open* or simply *contained*. Pedagogically, a more open course will provide opportunities for communication and knowledge transfer, either within the course platform or beyond it. These opportunities are limited in the less open course and absent in a contained course. In terms of content, a range of media used may allow greater personalisation and openness. The more materials are expected to be created by or between learners, the more open the course. A level of knowledge sharing is expected, and assessed, in a more open course. In a contained course, knowledge sharing is not expected at all. Assessment in a more open course covers peer grading but is made optional in a less open course and not present at all in a contained course.

Table V. Degree of openness within xMOOCs

Those designing MOOCs are faced with decisions about the degree of openness that want to provide in respect to pedagogy, content and assessment and might seek a fit between their courses and their teaching philosophy as well as their understanding of learner readiness. By inspecting courses more carefully learners may see they have choices in selecting from the

xMOOCs that are available and may judge the suitability of a course against their preferred pattern of learning.

Conclusion

This paper has explored categories of MOOCs and how xMOOCs differ in terms of pedagogy, content and assessment. It has argued that xMOOC is too broad a term and a more fine-grained categorisation is needed if we are better able to describe courses on offer and if designers and learners are to understand the range of possibilities open to them. A more nuanced approach can lead to course that better reflect providers' educational philosophies and the needs of their potential learners. Many of the difference between xMOOCs revolve around levels of openness, not just in terms of pedagogy but also in the assumptions made about the sharing practice and the transfer of knowledge.

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